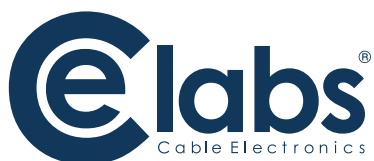


INSTRUCTION MANUAL



MP700 High Definition Media Player



THIS PAGE IS LEFT
INTENTIONALLY BLANK

Safety and Notice

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that product heat.
9. Do not defeat the purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where the exit from the apparatus.
11. Only use the attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.



Figure 17 DU-Portable cart warning

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS DEVICE TO RAIN OR MOISTURE. DO NOT OPEN THE UNIT. REFER SERVICING TO QUALIFIED PERSONNEL ONLY.

Table of Contents

INTRODUCTION.....	3
FEATURES.....	4
SPECIFICATIONS.....	5
SUPPORTED RESOLUTIONS.....	6
PACKAGE CONTENTS & QUICK FACTS.....	7
INSTALLATION.....	8
Detailed Player View.....	8
Remote Control.....	9
Connections.....	10
Mounting.....	12
CONTROL SOFTWARE.....	13
Hardware.....	13
Software.....	13
OPERATION.....	24
EXTENDED APPLICATIONS (XAPP).....	28
TROUBLESHOOTING.....	33
APPENDIX.....	35
WARRANTY.....	45

INTRODUCTION

The MP700 is a high quality advertising solution that allows users to play content from multiple sources such as a solid state memory device, hard drive, or IP streams from Ethernet or ATSC tuner (MP700T model). It has an extremely effective performance versus cost ratio and provides a great return on investment.

The MP700 is a commercial grade, application specific graphics processor, specifically designed for driving digital signage. Do not let the small size fool you; the powerful internal video processor rivals the performance of a PC costing many times more. The graphics capability is on par with a BluRay player but with much greater reliability because there are no moving parts.

The MP700 HD Media Player is a fully customizable platform designed by CE Labs with a latest “System on Chip” technology specifically to meet high requirements in commercial digital media market.

This HD Media Player provides an affordable and flexible method for High Definition MPEG2/4, H.264, and WMV9 streaming media delivery without using a PC. It supports both real time streaming from a centralized network media source and localized playback from the unit’s flash drive, an attached USB drive, or SD card.

This HD Media Player comes with full-featured integrated playlist providing advanced scheduling of media and display control without interaction from an external source.

With its dual screen capability through HDMI for HD video contents and VGA for graphics contents, you can easily design a custom interactive Kiosk with just one player.

Quicksign Pro 700 content management application provides a convenient method for control, status, and media distribution to the HD Media Players over a local LAN.

For WAN platform, please inquire about our hosted CCM Enterprise content management server.

Applications:

- Digital Signage
- Education and Campus Environments
- Corporate Communications
- Hospitality
- IPTV STB
- PC Media Extender

Features

- Media engine is a Sigma Designs SMP8670 series
- Highly Reliable 100% Solid State HD Embedded Media Player with Fanless Commercial Grade Metal Chassis Design
- High Definition MPEG2/4, H.264, WMV9 real time decoding over Ethernet or from internal storage up to 40Mbps
- UDP/RTP/RTSP Multicast or TCP/IP connectivity (push or pull)
- Integrated Full-featured Browser with HTML, JavaScript
- Layered screen capable: Simultaneous HD Video & Browser Layers
- Dual screen capable: HDMI (HD video) & VGA (Graphics)
- IR remote & Button control for Setup and Playing content
- Full-featured playlist
 - Media files
 - Schedule
 - RS232 control
 - Multiple playlist support
- Multiple control methods
 - IR remote & push-button controlled OSD
 - RS232 control
 - HDMI CEC 1.3a
 - Fully supported SNMP API for 3rd party Software Integration
 - Quicksign Pro Software
- Integrated event logging
- Remote configuration and in-circuit Firmware update capability
- Watch Dog Timer for self-recovery
- Configurable auto-start content for continuous play
- RS232 port for external device control
- Customizable XApp for custom control / play features
- Digital Optical Audio Output
- Customizable GPIO control for external input/output
- Configurable content verification
- USB 2.0 Host x 2
- SD card 2.0 slot
- Optional SATA Hard drive
- Optional ATSC / Open QAM tuner
- Optional 802.11b/g/n USB-based wireless
- Optional Touchscreen

Specifications

Video Output:	<ul style="list-style-type: none"> • Component: Up to 1080p • Composite: 480i • VGA: Up to 1600x1200 • HDMI: Up to 1080p
Status Display:	14 digital LED, IP Address, System status
Audio Output:	<ul style="list-style-type: none"> • L/R Stereo: RCA x 2 • Digital: Optical/Toslink
Control I/O:	<ul style="list-style-type: none"> • GPIO (General Purpose I/O): 8x4 pin connectors 8 inputs x 8 outputs • RS-232: 9 pin male D-sub (DTE) • USB2.0: Host x 2 • IR Sensor: Remote Control Receiver • IR Pickup: 3.5mm jack (for external IR RX) • IR Output (Blaster): 3.5mm jack
Network Connection:	LAN: 10/100/1000 BASE-T WiFi: 802.11 b/g/n (USB optional)
Video Format Support:	<ul style="list-style-type: none"> • MPEG2: MP@HL • MPEG4.2: ASP@L5 • MPEG4.10(H.264): MP@L4.0 • WMV9: MP@HL • VC-1: AP@L3
Graphics Format:	JPEG: Baseline, Progressive, GIF, PNG Recommended resolution 1920x1080
Audio Format:	<ul style="list-style-type: none"> • MPEG1: Layers I, II and III (MP3) 2.0 • MPEG4: AAC-LC 5.1/HE-AAC 5.1 • Dolby Digital: 5.1 • WMA9: 2.0 • FLAC • MP3: Optional
Network Protocol:	IP•TCP•UDP•ICMP•ARP•DHCP•HTTP FTP•IGMP•RTP•RTSP•SNMP•NTP•DNS
File System Support:	<ul style="list-style-type: none"> • USB/SD card • FAT, FAT32, NTFS
Web-browser Specifications:	<ul style="list-style-type: none"> • HTML: v4.0 (Partial v5.0) • Javascript: ECMA262 ed3, Firefox 1.7, InternetExplorer 5.7 • CSS: v2.1 (Partial v3.0)
System Stability:	Non-volatile storage for FW & Config, Watch Dog Timer, RTC
Certifications:	UL / CE / FCC Section 15
Power:	<ul style="list-style-type: none"> • Input voltage: 12VDC • Power dissipation: 7 watts (max) • AC/DC Adapter: 100/240VAC 50/60Hz Optional screw on connector
Environment:	<ul style="list-style-type: none"> • Operating Temp: 0 – 40° C • Operating Humidity: 80% max, relative humidity, non-cond
General:	<ul style="list-style-type: none"> • Dimensions: 1" H x 8" W x 4" D • Unit Weight: 2 lbs

MP700G- Includes internal GPIO board with 8 pushbutton interfaces

MP700R – Base model for streaming applications

MP700T – Includes ATSC / QAM RF tuner module

(Contact sales @ 1-800-767-6189 for other models)

Supported Resolutions

The MP700 is capable of many output resolutions. There may be changed by SNMP network command, via QuickSign Pro v700, or by pressing the TV Mode button on the IR remote. Pressing the TV Mode button on the remote repeatedly will cycle through several different Video Resolutions.

Modes: 1080i59, 1080i60, 1080p59, 1080p60, 480i, 720p60, 720p50

	RESOLUTION		RESOLUTION
0	VESA_1600x1200x60	36	HDMI_1080p24
1	VESA_1360x768x60	37	HDMI_1080p25
2	VESA_1280x1024x60	38	HDMI_1080p29
3	VESA_1280x768x60	39	HDMI_1080p30
4	VESA_1024x768x60	40	HDMI_2880x480p59
5	VESA_800x600x60	41	HDMI_2880x480p60
6	RGB_1080i50	42	HDMI_2880x576p50
7	HDMI_1080i50	43	HDMI_1080i50_1250
8	HDMI_1080p60	44	HDMI_1080i100
9	HDMI_1080i60	45	HDMI_720p100
10	HDMI_720p60	46	HDMI_576p100
11	HDMI_40p60	47	HDMI_576i100
12	HDMI_480i60	48	HDMI_1080i119
13	HDMI_720p50	49	HDMI_1080i120
14	HDMI_576p50	50	HDMI_720p119
15	HDMI_640x480p59	51	HDMI_720p120
16	HDMI_640x480p60	52	HDMI_480p119
17	HDMI_480p59	53	HDMI_480p120
18	HDMI_720p59	54	HDMI_480i119
19	HDMI_1080i59	55	HDMI_480i120
20	HDMI_480i59	56	HDMI_576p200
21	HDMI_720x240p59	57	HDMI_576i200
22	HDMI_720x240p60	58	HDMI_480p239
23	HDMI_2880x480i59	59	HDMI_480p200
24	HDMI_2880x480i60	60	TVSTD_1080i60
25	HDMI_2880x240p59	61	HDMI_480i240
26	HDMI_2880x240p60	62	TVSTD_480p
27	HDMI_1440x480p59	63	TVSTD_480p59

Package Contents

- 1x MP700 Media Player
- 1x 12 Volt DC Universal Input Power Supply
- 1x Remote Control
- 2x AAA batteries
- 1x HDMI™ cable
- 1x Quick Start Guide
- (optional) DB-15 to RCA Component Video Cable
- (optional) L/R Stereo Audio Cable

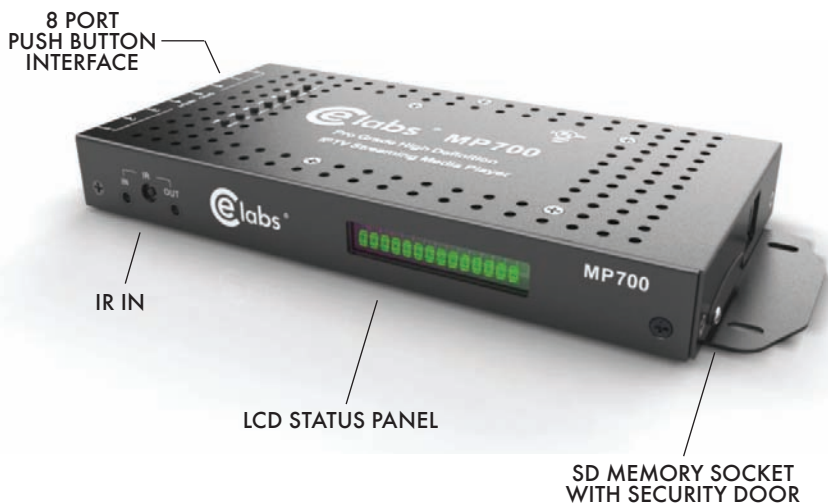
MP700 Quick Facts

Use the remote control to locally start and stop the player.

- Press the STOP button to stop the currently playing file.
- Press the "MENU" button on the remote and then "FILE BROWSER" on the OSD to browse the files on the internal memory card.
- Look under VIDEO to see video files. Highlight a file name and press "Enter" to preview or press "Play" to start the file in full screen mode. Pressing ENTER will start the video in the upper right hand preview window. The file will play one time. In order to loop a file, it must be in a playlist.
- Look under HTML to launch the locally stored HTML files such as Menu boards and other signage layer content.
- Under SETUP, the network settings can be configured. This is where you find the unit's IP address. You may also view network settings and firmware information on the INFORMATION page.
- The media player is compatible with WMV, MPEG2, and H.264. Quicktime and Flash files are not compatible.
- To change the unit video output resolution, press the TV MODE button on the remote control. Each time the button is pressed, it will advance to another resolution (480i, 720p50, 720p60, 1080i, 1080p, etc.).

INSTALLATION

Detailed Player View



Detailed Player View

The MP700 may be ordered with or without the GPIO push button board. See the GPIO section in this document for a description of the connector pinout.



Remote Control

The unit includes a remote control for accessing the On Screen Display. Press the MENU button to bring up the OSD menu. Use the Arrow keys to navigate and press ENTER to select an item. If you wish to exit the On Screen Display, press MENU repeatedly until the OSD is removed.

If you require a different Video output resolution, the TV MODE button when pressed will toggle through several options (Composite Only, 720p 60, 720p 50, 1080i 59.94, 1080i 60, 1080p 59.94, and 1080p 60.

In the blue button section you may use: PLAY, STOP, FWD, REV, PREV, and NEXT. Pressing PLAY will alternate between PLAY and PAUSE.

The numerical buttons may be used to enter a RF channel on the MP700T unit. the format is: '041' to tune in channel 4-1. To the upper channels, use '331' to select channel 33-1. These channel selections are temporary and will not be kept on a power cycle. In order to keep a RF channel, it must be programmed into a playlist.

Note: Before the tuner may be used, it may be necessary to perform a RF channel scan to populate the local channel table. An alternative is to use the fixed channel table. This can be set on the unit OSD under Menu, Player Setup, Configuration, Tuner Settings, and then Tuner Channel Mode.



Connections

The MP700 is capable of driving a wide variety of displays at up to 1080P resolution at bit rates up to 40 Mbps (mpeg2 file type). Depending upon your application, connect the following cables to operate the unit.

- **Display cable** – Depending on the application, plug in the cable from the media player to the display, switch, or first distribution amplifier. The HDMI and Component outputs are both active simultaneously if the resolution is set to one that is compatible with both interfaces.
 - The component video output (for connection to CELabs AV901HD distribution amplifier) uses a DB-15 to RCA cable to break out the video signal. The L/R audio ports can be used in conjunction with the component or the composite video ports.
 - If the TV wall uses CE labs HDMI distribution amplifiers, connect the HDMI cable.
 - If your application uses an older monitor or if you need to drive a modulator, the composite video port is always on regardless of the output resolution.
 - The DB-15 VGA/YPrPb port supports the output of component and VGA video. Only one or the other is available at one time. In order to set the output resolution to a VGA mode, use Quick Sign Pro 700 and select TOOLS, Set Video Output, and Custom.

Note: Video output resolution has been pre-set at the factory for 1080p (in most applications) on the HDMI and Component Video Outputs (unless another resolution is requested). Standard 480i video is available on the composite video port at all times. The output and resolution can be specified at time of order and pre-set to your requirements.

- **Audio cable** – The analog audio output is via two RCA jacks on the rear panel. Connect a patch cable from the rear jacks to the display or audio system as desired.

Note: If HDMI cables being used, separate audio cables are not required as long as the monitor has internal speakers.

- **Toslink** – Digital Multi-channel audio is available on the optical connector. You may select between PCM or AC3 on the OSD by selecting Menu, Player Setup, and Audio Settings. Save your selection before exiting.
- **GPIO** – These ports are generally used to interface with pushbuttons that can be used to trigger certain videos. Refer to the GPIO section later in this manual for a full description of the eight GPIO ports.
- **RS-232** – The media player may be controlled via the serial port. Call Customer Support for the RS-232 control X-app and the proper command protocol.

- **Tuner Input** (ATSC Tuner Option on the MP700T) – Connect the F-connector cable from the off-air antenna or High Definition modulator to the Tuner Input. Tighten the F-connector securely. Ensure the RF level at the input is greater than -20dBmV (unit mutes @ -25dBmV). The ATSC channel may be changed by remote PC application or by IR remote control. Press the up or down arrow keys to increase or decrease the channels one at a time. You may also type in the channel number directly on the remote. Typing a 0 first is necessary on single digit channels.

Example: To tune to channel 4-1, type 0 then 4 then 1 and press the Enter key.

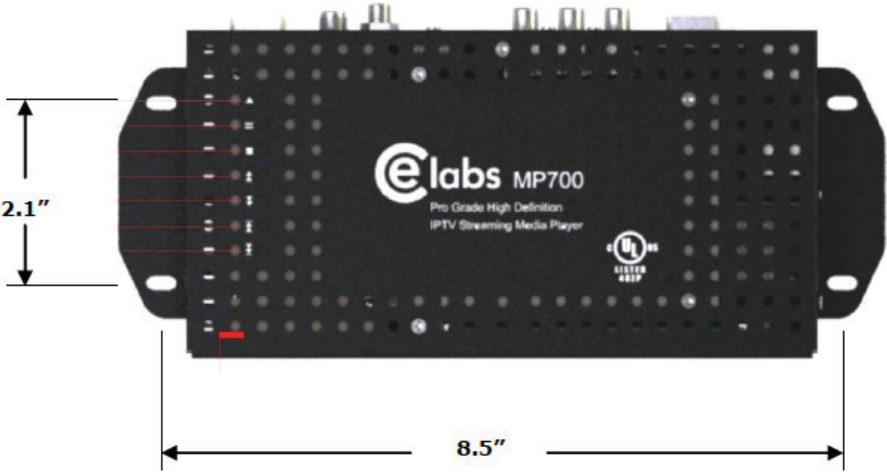
- **Power** – The MP700 uses a 12VDC, 2A power supply. Total power consumption is approximately 7 Watts which leaves a large reserve in the power supply. Insert the power supply 12 VDC plug into the MP700 power jack. Turn the knurled ring clockwise to tighten the security ring if this option is purchased. Insert the AC Plug of the power supply into an electrical outlet. After a few seconds, the front panel green LCD will light up (The panel will display the unit's IP address for a brief period during boot up).
- **Ethernet** – If this is a networked installation, connect the Ethernet Port to a Switch or Router via an Ethernet cable. The unit will automatically obtain an IP address as long as unit's DHCP is selected as ON and there is a DHCP server somewhere on the local subnet.

Please wait for approximately 1 1/2 minutes until the unit completes the boot-up process. The media player can be configured to have a default start-up item such as a video file or ATSC RF channel (ATSC option). If the default startup item has been configured, Video should start playing automatically when the unit has completed its boot-up process.

- **IR Remote** – The IR remote is used to access the unit's On Screen Display menu for configuring the unit and perform basic unit controls such as setting volume and selecting RF channels. If you need to determine the IP address for the unit, go to the network settings window. In certain applications, with channel setting pre-set at the factory, the infrared remote is not needed. There are applications for the MP700 that use of the remote could be helpful. Please store the remote in a safe location for possible later use.
- **IR IN Jack** – A remote IR receiver may be plugged into the front panel IR jack. This allows use of the Remote Control even when the unit may be installed in an enclosure or behind a TV where IR access is difficult. The connections are: Tip=Signal, Ring=GND, and Sleeve=+5V. Inserting a plug into this jack will defeat the onboard IR receiver.
- **IR Eye** – There is an internal IR receiver just to the right of the IR input jack. Point the IR remote at this target when accessing the OSD menu.
- **IR OUT Jack** – This is a future option that will allow customers to control certain products by issuing IR commands from the MP700. The connections are Tip=+5V, Ring=Signal, Sleeve=Signal.

Mounting

The media player should be located in a well ventilated air conditioned space for best operation. The overall dimensions of the units are 4.3" x 9.6" x 1.1". The mounting dimensions given below are measured from center to center of the mounting holes. The mounting holes will accommodate a #6 screw.



The unit has ventilation holes all along the top. Theses should remain uncovered during operation. There are no ventilation openings on the bottom of the chassis, so it may be bolted directly to a shelf or monitor.

CONTROL SOFTWARE

Hardware & Software Requirements

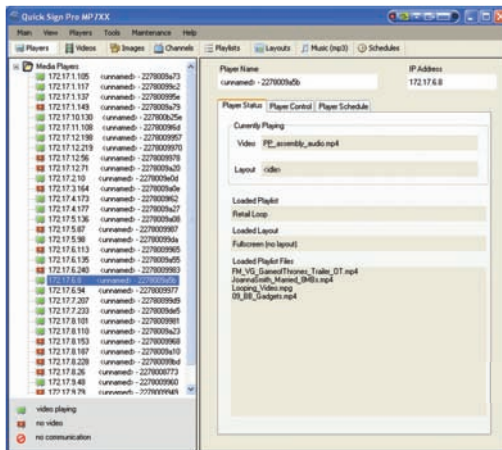
Hardware

- **Platform:** Pentium4 2.0GHz Class Processor or better
- **Operating System:** Windows XP Pro/Vista Premium, Windows 7 or 8
- **RAM:** 512 Mbyte or more
- **Ports:** Ethernet 10/100
- **Communications:** Players use ports 80 and 161 for HTTP and SNMP

Software

CE labs® QuickSign Pro v.700

The MP700 can be remotely controlled from within a LAN (restricted to local sub-net) via the CE labs QuickSign Pro700® software. This application allows you to scan your network to discover installed players or you can manually add them. Once the player is input, the software may be used to check status, set video resolution, add or delete content, create playlists, etc.

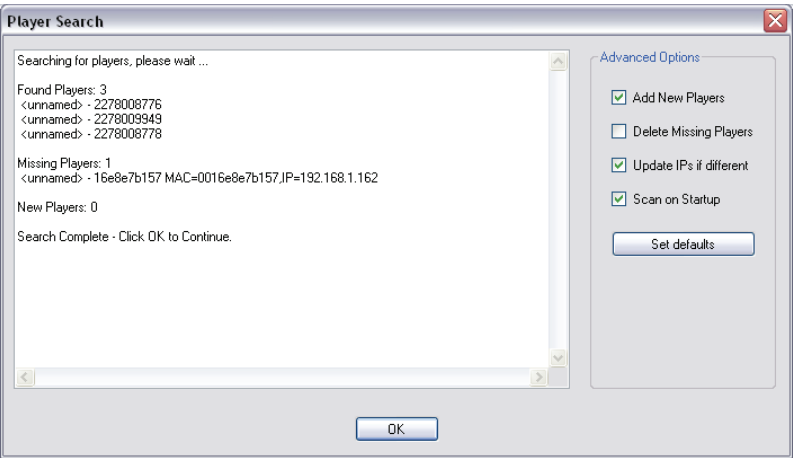


Please refer to the Help tab in Quick Sign Pro for a complete reference of available command options.

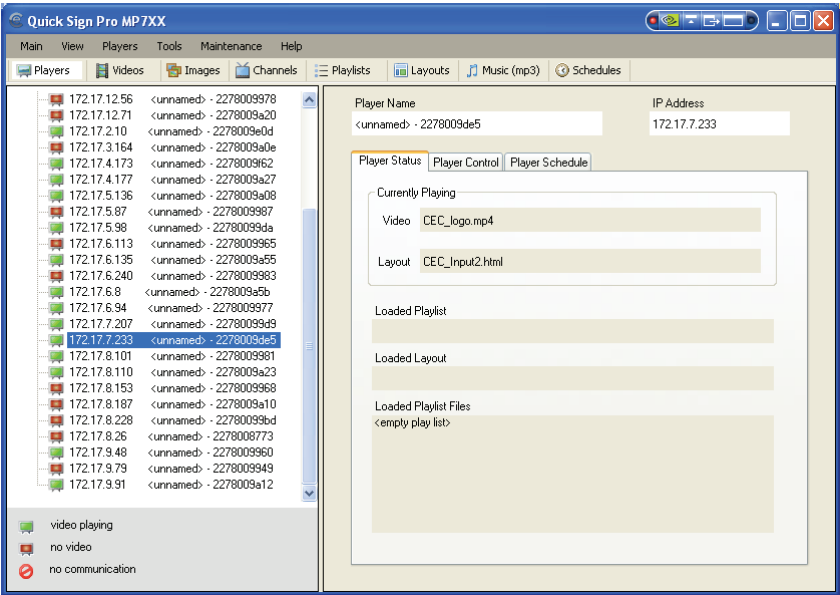
The Quick Sign Pro software is available at no cost with the media player. It may be downloaded from http://www.celabs.net/software/qp700_rel. The help tab in Quick Sign Pro will show you how to use the software to get started controlling your players. Please see Appendix for Installation details.

Software (continued)

The first screen you see on QuickSign Pro is *Player Search*. Click OK to add the discovered players to the Media Player database.



The main screen with *Player Status* selected will show you what is loaded and playing on the selected media player.



GPIO Interface Programming

The MP700G can be ordered with a GPIO interface to allow customer interaction with the player using push buttons or sensors. This allows the player to play a video, playlist or ATSC tuner channel upon receiving a button press from the GPIO inputs of a MP700 media player. Up to eight button inputs are supported. One can easily configure a wide variety of media to play for each button. An 'idle loop' video is played when the video triggered by the button is not playing. The actions associated with each GPIO port may be assigned by using the Tools, Button Setup menu in QSP700.

Creating the Push Button configuration files with Quick Sign Pro:

Start QSP700 on a PC that resides on the same network as the target media player, select the correct player, click on TOOLS and then click BUTTON SETUP. Assign content via the drop down windows and then click Load Button Setup to send the media and configuration files over the network to the player. This may take quite some time depending upon the size of the assigned media.

If you do not have network visibility to the player, the complete configuration and media can be sent to a SD card plugged into your PC by pressing the Publish button. This copies all necessary configuration files, videos, pictures, layouts, etc. and places them in the proper folders on the SD card. Simply take the newly loaded SD card and plug it into the player and the unit will begin to play the files.

Button Setup

Button Configuration

Open

Save

Enable	Item	Type	Source	Play Mode					
<input checked="" type="checkbox"/>	Button 1	video	poc2.mpg	play once	Video	Playlist	Playlist+Layout	Tuner	Reset
<input checked="" type="checkbox"/>	Button 2	playlist	WaterWaltz	play once	Video	Playlist	Playlist+Layout	Tuner	Reset
<input checked="" type="checkbox"/>	Button 3	video	Butterfly.wmv	play once	Video	Playlist	Playlist+Layout	Tuner	Reset
<input checked="" type="checkbox"/>	Button 4	playlist	ShortPlaylist	play once	Video	Playlist	Playlist+Layout	Tuner	Reset
<input checked="" type="checkbox"/>	Button 5	tuner	14-1, 30 seconds	play once	Video	Playlist	Playlist+Layout	Tuner	Reset
<input checked="" type="checkbox"/>	Button 6	video	Lake.wmv	play once	Video	Playlist	Playlist+Layout	Tuner	Reset
<input checked="" type="checkbox"/>	Button 7	<not set>	<not set>	play once	Video	Playlist	Playlist+Layout	Tuner	Reset
<input checked="" type="checkbox"/>	Button 8	<not set>	<not set>	play once	Video	Playlist	Playlist+Layout	Tuner	Reset
<input checked="" type="checkbox"/>	Inactivity Loop	video	gopro_audio_20mb.mpg	loop	Video	Playlist	Playlist+Layout	Tuner	Reset

Player Name:
<unnamed> - 2278009de5, 172.17.7.233

Load Button Setup

Remove Button Setup

Publish

Help

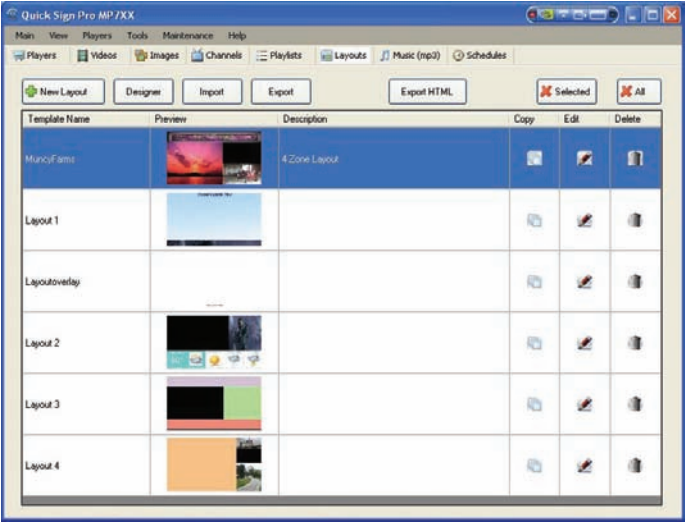
Exit

Note: This application was loaded separately on the MP500, but it is available at all times on the MP700.

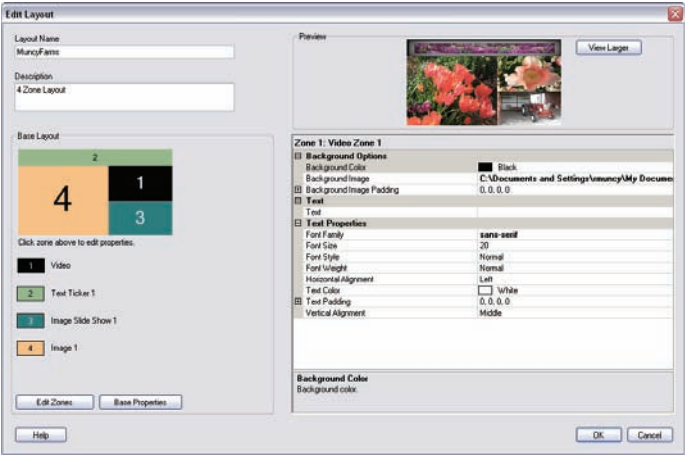
Layouts and Templates

QuickSign Pro has the ability to create and manage multilayer screens via templates.

Select *Layouts* from the toolbar. You may edit an existing layout or create a new layout from the included set of templates.



The image below is showing the template edit screen. There are a couple of samples you can import or you may create your own template with graphics of your choice.



Please see the help files in QuickSign Pro for additional information on the program operation.

Software (continued)

Firewall Issues

Quick Sign uses HTTP protocol when downloading files to the media players. If Quick Sign fails to download files to the players, a PC firewall or a firewall in the router may be blocking this operation. Virus protection programs may block this operation also.

Unblocking the Computer Firewall

When Quick Sign is first started, you will be prompted to unblock the firewall for Quick Sign. Please accept to unblock. This does not pose much of security issue due to the fact that you are only unblocking the Quick Sign application as opposed to the whole computer and it will only download video files that you have specified. Usually no further action will be needed and Quick Sign will function properly.

Manually Unblocking the Computer Firewall

If video files fail to download, you may need to verify that the firewall is indeed off for Quick Sign. You can temporarily turn the firewall completely off to test if this resolves the file transfer issue.

Windows7/VISTA Operating System:

To turn firewall completely off (not recommended):

1. Control Panel > Security > Windows Firewall > Windows Firewall on/off
2. Select Off
3. Click OK

To allow just Quick Sign through the Firewall:

1. Control Panel > Security-Windows Firewall > All a program through Windows Firewall
2. Click Add Program
3. Browse to C:\Program Files\CE labs\Quick Sign Pro\QuickSignPro.exe for Quick Sign Pro (Typical, may be different location on some PCs)

*QS300 and QS400 typical locations:

- QS 300: C:\Program Files\CE labs\CCM Quick Sign 300\CCM Quick Sign for HD300ZX.exe
- QS 400: C:\Program Files\CE labs\CCM Quick Sign 400\CCMQuickSign.exe

4. Click OK

Now add port 7898 TCP:

1. Click Add Port
2. Set Name: http port:7898 TCP.
3. Click OK

Software (continued)

XP Operating System:

To turn firewall completely off (not recommended):

1. Control Panel > Security Center > Windows Firewall > Firewall on/off
2. Select Off
3. Click OK

To allow just Quick Sign through the Firewall:

1. Control Panel > Security Center > Windows Firewall
2. Click Exceptions Tab
3. Click Add Program
4. Browse to C:\Program Files\CE labs\Quick Sign Pro\QuickSignPro.exe for Quick Sign Pro (Typical, may be different location on some PCs)

*QS300 and QS400 typical locations:

- QS 300: C:\Program Files\CE labs\CCM Quick Sign 300\CCM Quick Sign for HD300ZX.exe
 - QS 400: C:\Program Files\CE labs\CCM Quick Sign 400\CCMQuickSign.exe
5. Click OK

Now add port 7898 TCP

1. Click Add Port
2. Set Name: http port:7898 TCP.
3. Click OK

Virus Protection Programs

If you are running a virus protection program, the settings may need to be altered to allow Quick Sign to use the HTTP protocol (TCP/IP). Virus protection programs vary widely so no details are provided here.

Software (continued)

Disabling Checksum Offloading

If you have a large number of download failures with Quick Sign during Load/Play, the procedure below may help. Note that if the downloads are always failing, you likely have firewall issue. Please refer to Quick Sign help on disabling the firewall in that case.

Rarely with some newer network cards, Quick Sign will have an usually high number of download errors. We have found that by disabling "Checksum Offloading" on the network card often corrects these errors.

VISTA/Windows 7

1. Go to Control Panel > Hardware and Sound
2. Click on Device Manager. (For Windows 7, Device Manager is located under Device and Printers)
3. Select the network device under Network adapters and right click and select properties.
4. Find the "Checksum Offloading" or maybe "IP4 Checksum Offloading" and select disable.
5. Click OK

XP

1. Go to Control Panel > System
2. Click on Hardware Tab.
3. Click Device Manager.
4. Select the network device and right click and select properties.
5. Find the "Checksum Offloading" or maybe "IP4 Checksum Offloading" and select disable.
6. Click OK.

Software (continued)

CE labs CCM2 Content Manager for Windows®

The MP700 can be remotely controlled over the internet via the CE labs CCM2 web application. The CE Labs Content Manager (CCM2) allows users to upload media files, create content playlists, control player parameters and download media/playlist information to the MP700 media player over the internet. CCM2 can also be used on private and local networks. The CCM2 web application is accessed using any standard web browser such as Internet Explorer, Firefox, Chrome, or Safari.

NOTE: Players that are to be used with CCM2 must be loaded with the CCM2 X-App. The CCM2 X-app is an application that on the player. The MP700 can be ordered with this application pre-loaded or it can be loaded using Quick Sign Pro 700 software.

Key Features:

Manage 1 to several hundred players

- Add, edit, and remove players
- Assign names and locations
- View player status
- Organize into player groups
- Assign descriptive information to each player

Create video content packages

- Create content packages that group playlists & schedules together
- Easily add, edit, or remove playlists and schedules
- Assign content packages to players
- Assign descriptive information to the content package

Upload video files to be distributed

- Organize and manage uploaded videos
- Preview images of videos

Layout support

- Layouts provide a way to show text, images, and a RSS feed info around a predefined video area.
- Upload layouts created with Quick Sign Pro.
- Schedule layouts to appear on media players.

Quickly create video playlists

- User-friendly play list editor
- Create any number of playlists

Easily schedule video content

- Schedule play lists by start dates and times
- Schedule by day of week
- Easily set schedules by selecting playlist and clicking on calendar dates
- Schedule playlists with layouts

Automatic Operation

- Periodic status check
- Download video files as needed per user selectable download times
- Playlists run as scheduled

Monitor Player Status

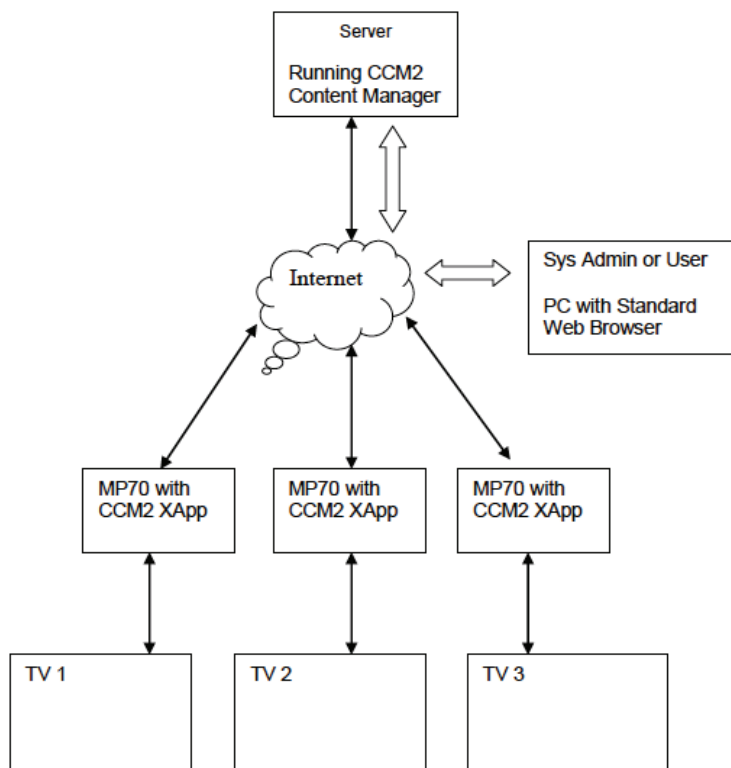
- Updated about every 10 minutes
- View playing content and playlist names
- View downloading status
- View online/offline status

Reporting

- Play count logging
- File downloads times and total bandwidth usage
- Specify report for individual players or player group
- Specify start and stop dates
- Export reports to Microsoft Excel

Software (continued)

Typical CCM2 Systems Steup



In the CCM2 system, the players are preconfigured with the CCM2 server address. Players can then be operated in any location that has internet access. This arrangement does not require port forwarding on the local router and eliminates many of the hassles with firewalls.

This environment allows System administrators or users to access the secured server over local or internet connections to update content and schedules for all the media players in the system.

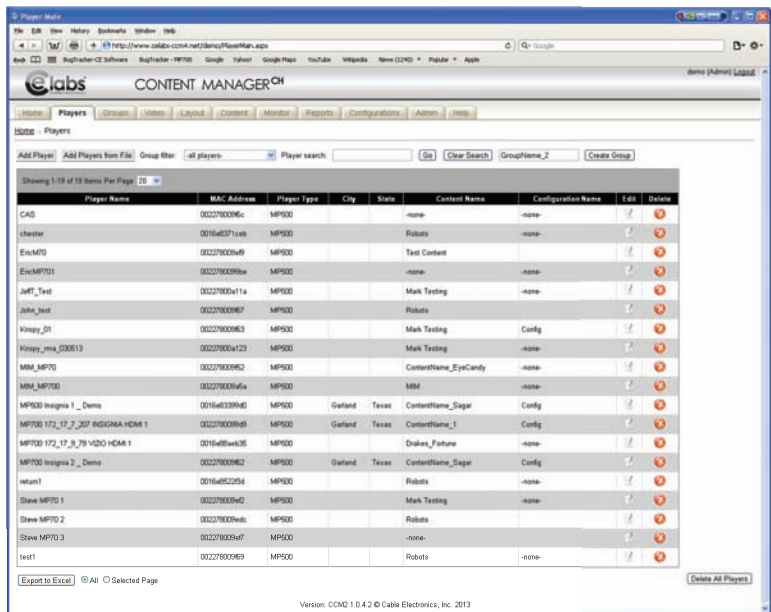
Software (continued)

CCM2 for Windows®

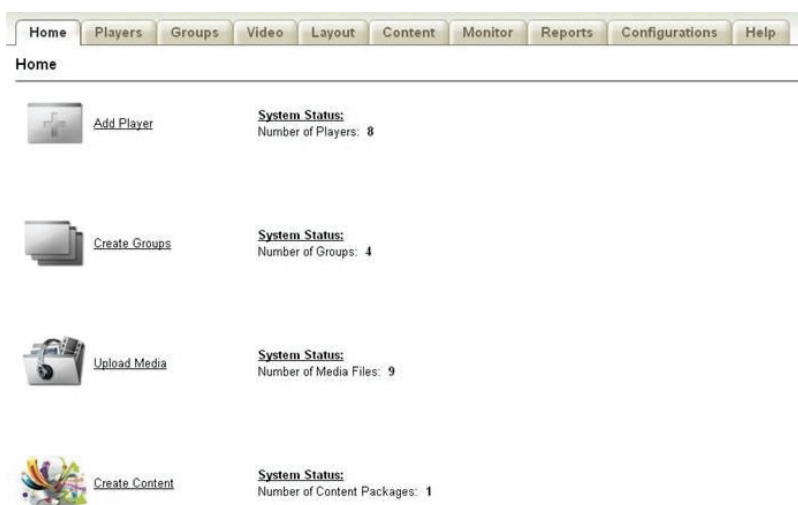
CCM2 is enterprise level software used to control hundreds of media players that can be spread over a diverse geographical or network landscape. This type of software is generally very expensive to purchase and maintain, but our software breaks barriers in price point per unit. Contact our CE labs Sales department for more information and to schedule a demonstration.

In order to use the CCM2 system, an application is loaded on the MP700 that will link to the control software using the configured server HTTP address. This method allows for communications to be established without the need for forwarding ports through corporate routers.

When communication is established, the player is added to the system, assigned content packages, and scheduling information. Data logs can be reported from the player to include proof of playback information.



Software (continued)



Getting Started:

After setting up one or more media players, you are ready to begin adding players to the system and assigning content so that video and playlists can be loaded. The best process to add players is to allow them to call into the server and click on the add button that appears on the MONITOR page. The players can be manually added if you know their MAC address but care must be taken to enter the information accurately. It is recommended to add the unit to the system once they have connected to the server at least one time.

Getting Started Steps:

- Step **1**: Add Media Players
- Step **2**: Create Player Groups
- Step **3**: Upload Video Files
- Step **4**: Create a Configuration
- Step **5**: Assign Configurations to Players
- Step **6**: Create a Content Package
- Step **7**: Create Playlists and Schedules
- Step **8**: Assign Content to Players
- Step **9**: Monitor Players
- Step **10**: Collect logs and produce reports.

Please contact CE labs sales for CCM2 Content Manager pricing information.

OPERATION

Initial Startup Procedure

Once the unit has been mounted and configured with the appropriate cabling, connect the power supply to a suitable AC outlet. The green LCD on the front of unit will illuminate after a brief delay; it will show the unit IP address. The media player may take about one and a half minutes to fully boot to the operational state depending upon the startup configuration. The LCD screen reports "IDLE" when there is no playback and shows "PLAY" while playing a file.

Theory of Operation

Once connected and powered on, the unit is ready to use. The MP700 can be configured with a default startup item that will automatically start immediately after booting. The unit will play this item until instructed to play something else. If no startup item has been defined, the screen may only show the CE labs logo and then a black screen.

The player works well with a variety of media files at high bit rates, but please adhere to the media creation standards in the appendix at the end of this document. Also, be aware of the bit rate versus the speed of the SD card if you are using local storage. If the video experiences freeze frames or stuttering, the bit rate may be too fast for the card installed in the player.

The media player can play content from many sources:

- Real Time Source
 - RF ATSC Tuner (MP700T only)
 - Ethernet RTSP IP Stream
- Local Storage Source
 - Internal Storage Card (optional)
 - Internal Storage Hard Drive (optional)
 - USB Port for Memory Stick or Hard Drive

The player may be used as a stand-alone High Definition source (once content is loaded on the internal storage device) or greater versatility is allowed when the player is connected to a network. The primary focus of the MP700 is media playback and control device that is part of a network of media players. The network interface is a powerful tool in managing from one to thousands of players. The GPIO interface allows for local interaction through push buttons or external sensors. The MP700 supports a large library of SNMP commands that are used to configure and control the unit.

OSD / On Screen Display Menu

Point the remote control at the unit and press the MENU button.



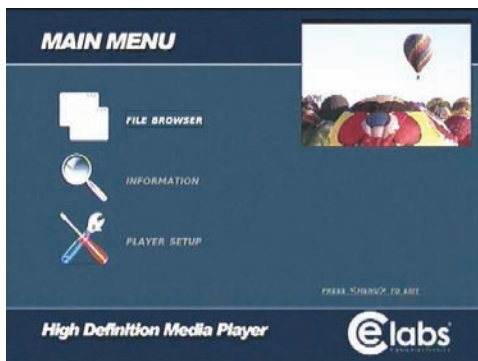
The menu at right will appear.

Pressing *ENTER* while the *FILE BROWSER* is highlighted will bring up this menu and allow you to directly launch any content that is locally stored on the unit SD card (or USB if inserted). Media must be stored in the proper folders on the storage device in order for it to be visible on this menu.

The *PLAYLIST* folder contains playlists that have been created and stored on the internal drive (SD or Hard Drive). Pressing play will sequentially play all files in that playlist one time. If the playlist was created with a loop command at the end, the files will loop around and play again continuously.

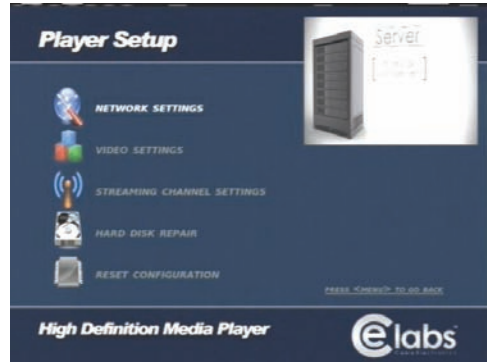
The *Video* folder contains individual video files. Pressing play on one of these files will cause them to play one time.

HTML, Picture, and Audio work similar to the Video folder function with the corresponding formats. One key feature of the HTML layer is the ability to display HTML graphic elements and call a video to play within the HTML page.

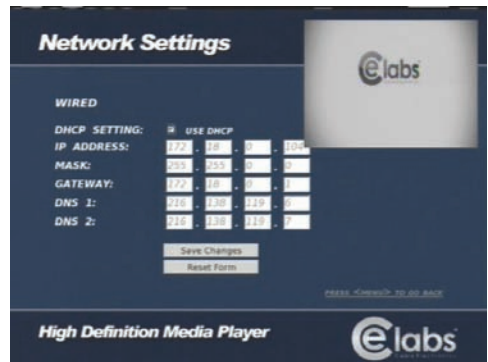


Going back to the *main menu* screen and pressing *Information* will show you the present firmware and software revisions as well as the current Network configuration.

Many of the control functions are accessible via network control. In order to determine the IP Address of the unit, press *MENU* on the Remote Control while pointing at the IR input on the front of the unit. Press the down arrow key and then *ENTER* on *INFORMATION*. If you need the unit to be on a different address, it may be changed in the *NETWORK SETTINGS* menu as shown below. The Network Settings are accessed through the Player Setup menu.



In most installations, it is best to use DHCP and let the local router assign an IP address to the media player. The unit may be given a permanent fixed address by un-checking the *USE DHCP* box on this screen and updating the *IP ADDRESS*, *MASK*, and *GATEWAY* fields.



You must highlight *Save Changes* and press *ENTER* on the remote control for these settings to be remembered once you exit this screen.

Warning: Verify that there are no other devices on your subnet with this IP Address. Two devices with the same address will cause erratic behavior.

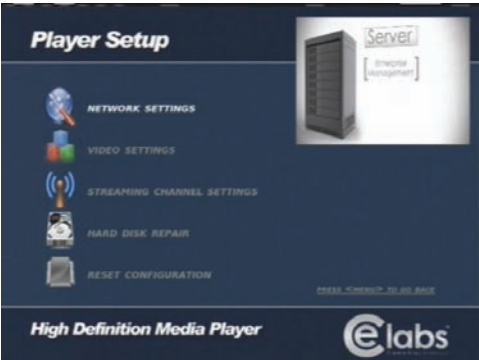
To adjust the appearance of the video on the monitor, navigate to the Player Setup menu, and press *VIDEO SETTINGS*.



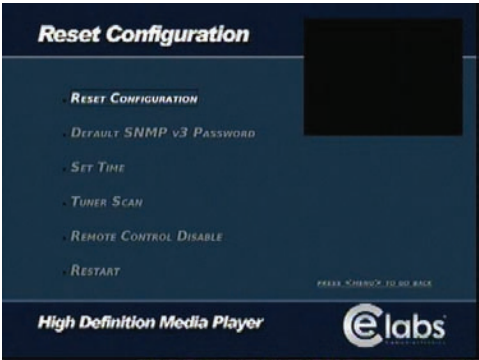
Move the highlight cursor to the parameter to adjust and use the right or left arrow on the remote to change the value. Watch the monitor to see if the change is acceptable.

The *Color Profile* adjustment allows you to choose from preset video configurations that were derived from typical brands of monitors. The size controls allow you to customize the picture size to fit the video monitor. These settings are saved automatically. Press the *MENU* button to exit this screen.

The next item on Player Setup is *HARD DISK REPAIR*. This is used to format a new SD card or repair the internal SD card should it become corrupted.



The last item on the setup menu is *RESET CONFIGURATION*. This is used to replace default values, setup a password for SNMP version 3, set the Real Time Clock, disable the IR remote number buttons, or to reboot the unit.



Remote Control

The unit includes a remote control for accessing the On Screen Display. Press the *MENU* button to bring up the OSD menu. Use the Arrow keys to navigate and press *ENTER* to select an item. If you wish to exit the On Screen Display, press *MENU* repeatedly until the OSD is removed.



If you require a different Video output resolution, the *TV MODE* button when pressed will toggle through several options.
(Composite Only, 720p 60, 720p 50, 1080i 59.94, 1080i 60, 1080p 59.94, and 1080p 60)

In the blue button section you may use: **PLAY, STOP, FWD, REV, PREV, and NEXT**. Pressing **PLAY** will alternate between **PLAY** and **PAUSE**.

EXTENDED APPLICATIONS-XAPP

X-App Manager Technical Specification

1.0 Overview

The X-App Manager is a base software component of the MP7XX series players. The X-App Manager provides a number of functions that are an extension or an enhancement of the player's SNMP command functions. These functions include the following:

- Auto-starting of playback
- Scheduling of playback
- GPIO support (buttons/kiosk mode)
- Scripting for custom operations
- Loading/Unloading of custom applications (X-App)
- Loading/Unloading for legacy X-Apps (TNET X-Apps)
- Player configuration

These functions are mostly commanded from an external memory device (SD card or USB flash drive). Additionally, the X-App Manager provides a network-based interface for performing some general purpose functions and facilitating the loading and unloading of player applications (X-Apps).

2.0 X-App Manager Functions

2.1. Auto-starting of playback

A video, playlist, browser, or music file can be selected for playback on player start up. The item to start is specified in the configuration file on the external memory device. The playback starts when the player first powers up or when the external memory device is inserted.

Note: Browser file types (html) may include a video zone where a video playlist can optionally be played.

2.2. Scheduling of playback

Playback can be scheduled based on calendar dates, times, and week days. Video playlists can be scheduled. Also Html files (layouts) can be scheduled. The scheduled data is placed in an XML file on the external memory device. The file format is the same as specified by the CE Labs Content Manager API.

2.3. GPIO support (buttons/kiosk mode)

On players equipped with GPIO, video or browser files can be assigned to play when a button connected to the GPIO is pressed.

2.4. Loading/Unloading of legacy X-Apps (TNET X-Apps)

The X-App Manager supports the loading and unloading of X-Apps ported from MP500 player for use in the MP7XX players.

2.5. Player Configuration

Various play configuration items can be set from the SD card or USB drive.

3.0 SD Card or USB Flash Drive Folder Structure

3.1. MP7XX Folders

The basic folder structure of the SD card or USB flash drive as used on the MP7XX players is as follows:

- Html/
- Video/
- Music/
- Picture/
- Playlist/

Media files and playlists can be placed in the associated folder. The SD card or USB flash drive is then inserted into the player and play back is then accomplished by using the IR remote. Quick Sign 700 can also be used to “publish” this structure including the desired content files and playlists to the SD card or USB flash drive.

3.2. MP7XXConfig Folder

An additional folder can be added to the structure that contains control and configuration items. The folder is named MP7XXConfig/. The MP7XXConfig folder is entirely optional. The structure on the SD card or USB flash drive will then be as shown below:

- Html/
- Video/
- Music/
- Picture/
- Playlist/
- MP7XXConfig/

3.3. Configuration File (mp7xx.conf file)

The configuration file can be optionally placed inside the MP7XXConfig folder. This is simple text file consisting of a number of optional commands & configuration settings. The file is named mp7xx.conf. The X-App Manager is responsible for reading this file & performing the commands & setting the requested configuration items. This is where you would define the desired default startup item (see 4.2.2). If the mp7xx.conf file does not exist, the X-App Manager remains passive & the MP7XX player will start play per the default startup item & operate in the normal manner based on its SNMP command set.

4.0 MP7XX Commands (mp7xx.conf file)

4.1. MP7XXConfig /mp7xx.conf Command Structure

Commands inside the mp7xx.conf file are formatted as follows:

command name, parameter1, parameter2, ..., parameterN

One command per line. The command name and associated parameters are comma delimited. Command names are not case-insensitive. Some parameters may be case sensitive (file names for example are always case-sensitive).

Commands will be executed in same order as listed in file. Some commands may require one time reboot to take effect; in this case all commands will be completed prior to any reboot which will occur last. Quick Sign 700 automatically generates the mp7xx.conf file for publish operations. The file may also be manually created and modified.

Example of a mp7xxx.conf file:

StartUpItem,Video,Robotica_1080.wmv

4.2 MP7XXConfig/mp7xx.conf Command Set

4.2.1. EraseTNETXapp

This command will erase a TNET X-App if it exists on player. See section of Legacy X-App Support for more information on TNET X-Apps.

4.2.2. StartUpItem

Sets the item to be played on player start up and upon insertion of the external memory device (SD card or USB flash drive). This may also specify a special operation on start up such as a Schedule or Script.

command: StartUpItem,<type or operation>, <item name>

<type or operation>= None, Html, Video, Music, Playlist, Schedule, Kiosk, CCM, Script

<item name>= file name of the item to be played (or as based on type)

startup types:

- **None:** Nothing will be started, the screen will be black.
- **Html:** File that is played in a browser typically an html file with extension .html/.htm.
- **Video:** Video file
- **Music:** Music file (mp3 encoded)
- **Playlist:** A list of videos, images, and/or html files to be played. The list is formatted according to the CE Labs MP7XX Playlist Specification.
- **Schedule:** Playback is based on a file containing scheduling information. The schedule file is an XML file formatted as specified in the CE Labs Content Manager API document.
- **Kiosk:** The player operates based on a button setup that indicates the video or playlist to be played when a button is pressed.

Note: The media file or browser file to be played must reside on the same memory device as the command file (mp7xx.conf).

Example: StartUpItem,Video,Robotica_1080.wmv

4.2.3. UpdateTNETXapp

This command will update the legacy TNET X-App if necessary. See section of Legacy X-App Support for more information.

command: UpdateTNETXapp,<TNET xapp file>
<xapp file>= name of the TNET X-App install file, must reside in MP7XXConfig folder.

Example: UpdateTNETXapp, smartplplayer_v112.tgz

4.2.4. UpdateXappManager

This command will update the X-App Manager itself.

command: UpdateXappManager,<xapp manager install file>
<xapp file>= name of the X-App Manager installer file, must reside in MP7XXConfig folder.

Example: UpdateXappManager,XappManager_v107.tar

5.0 General Operation

5.1. SD Card and USB Flash Drive Auto Detection

The X-App Manager auto detects insertion of the SD card or USB flash drive. If the inserted SD Card or USB flash drive contains the MP7XXConfig folder and a mp7xxx.conf file, then the required commands and configuration settings will be applied and playback will begin. If these items are not detected, then the player will operate as commanded by the SNMP command set. Refer to the CE Labs MIB Specification for SNMP command information. If the SD card or USB flash drive is removed, playback started from that device may be stopped (depends on current playback conditions and caching of current media files). When the SD card or USB flash drive is re-inserted, playback will be restarted regardless of current playback conditions.

Note: A USB flash drive will take precedence over an SD card.

5.2. Player Startup

On player start up the operation is as follows:

- The player checks the USB flash drive for the MP7XXConfig/mp7xx.conf file. If found, then the player will begin playback and configuring itself based on command in that file.
- If not found, the player then checks the SD card for the MP7XXConfig/mp7xxx.conf file.
- If USB flash drive exists on player start up and a valid MP7XXConfig folder and mp7xxx.conf exists then any commands or configuration items on the USB flash drive will take precedence over the SD Card and the SD Card items will be ignored.

Note: This startup procedure is also followed when a SD or USB device is inserted into the player. Therefore, device insertion is likely to cause new content to play or possibly restart the current content depending on whether or not the inserted device contains the mp7xx.conf file and is the priority device.

5.3. Legacy or TNET X-APP

If a TNET X-App has been loaded to the player, The X-App manager will start this application before attempting to read the mp7xxx.conf. Generally, the mp7xxx.conf should not be placed on players running a TNET X-App. The TNET X-App usually is intended to take full control. If a mp7xxx.conf does exist, the player will attempt to run as commanded, however, it is very likely to interfere with the TNET X-App operation and vice-versa.

Using X-App for CCM2:

The CCM2 X-App is a player application that allows the MP700 players to work with the CE labs Content Manager (CCM2). The CCM2 X-App is named CE labs Player 700. You will need to obtain the X-App from CE labs customer support.

The X-App may be loaded onto the MP70 by either of two methods:

- 1- Use Quick Sign Pro 700 to load the -XApp.

OR:

- 2- Put the XApp onto a SD card in the MP7XXConfig directory. There also has to be a file called "mp7xx.conf". This file should contain the line "UpdateTNETXapp, celabsPlayer700_v117.tgz".

Note: The file "celabsPlayer700_v117.tgz" may need to change if newer software is released.

Interfacing with CCM2:

In order for player to work with CCM2, you must know the CCM2 server address and enter it into the player.

The address can be configured by either of two methods:

- 1- Use the player's web interface.

- From a browser that is on the same network as the player, go to the web interface of the player. (Type the IP address of the player in the browser address bar).
- Set the CCM2 server address in the appropriate field and click save.

OR:

- 2- Use text file with USB flash drive:

- Place a text file named USB.CONF on an otherwise empty USB flash drive. The file must be named "USB.CONF" (all capitals please).
- The USB.CONF file contains the server address. See CCM2 documentation for formatting details.
- Insert USB Flash Drive into the MP70 media player.
- Wait at least 10 seconds and remove the USB drive. Unit is now configured.

TROUBLESHOOTING

1 – The MP700 has been pre-configured at the factory. After boot-up, if no video appears, please check the following:

- Is the monitor used capable of 1080P? The MP700 may be set to a resolution too high for the monitor.
- Verify that the TV/Monitor is set to the correct input.
- Is the green power LED on? If not, please check the power connection. Also check the switch on any power strip into which the unit may be plugged. Be patient as the unit starts from boot up, this may take almost 2 minutes.
- Reboot the unit by disconnecting and reapplying the power connector. This will set the unit back to the default startup item. Please wait two minutes and then press menu on the remote control. Browse the video folder and press play on the desired file.
- If the green power LED is ON, but there is no video, please check the HDMI video cable and make sure that it is connected properly to the first distribution amplifier or to the correct input on the TV. If all cables are properly connected, please unplug the power cable for 15 seconds and then reconnect.
- For a Tuner Input unit, if there is video, but the picture is frozen on the screen or is “blocking/pixelating” it is likely that the RF input cable is loose, or defective. Please tighten the RF input connector, or, if necessary, replace it. The signal level may be too low if there are several RF splitters inline. Try to locate the MP700 close to the RF source. If this does not solve the problem, please contact CE labs technical support at 800-767-6189 for further assistance.

2 – I cannot communicate over the network.

- Verify that the Ethernet cable is securely connected at both ends.
- Verify that the Ethernet connector LED is lighted to indicate presence of signal.
- Press Menu on the remote control and browse to player network setup. Verify that DHCP is turned on and do a “Save and Exit”. Now go to the info screen on the OSD and record the IP address. Verify this address is within the Sub-Net range required on your network.
- The computer firewall may be blocking the needed ports. Try to communicate with the firewall temporarily disabled.

Troubleshooting (continued)

3 – The video is playing, but it stops or stutters occasionally.

- This can occur if the video content bit rate exceeds the capability of the installed SD memory card. As a general rule, you are safe up to 20 Mb/S per second with a Class6 speed card. At bit rates over 20 Mb/S and up to 40 Mb/S, a Class10 speed or better SD card may be required. It is not recommended to exceed 40 Mb/S bit rate as this is approaching the limitation of the Sigma Designs® video decoder used in the media player.

4 – The HDMI video is there, but it is all green.

- If you have both a VGA cable connected to a monitor and a HDMI cable connected to a monitor, the player may become confused and initiate the video in the wrong colorspace mode. Disconnect the VGA cable and reboot the media player by unplugging the power supply. This should allow the unit to boot up in the correct mode.
- If the HDMI monitor was disconnected or turned off for a long period of time, the media player may need to be rebooted to renegotiate EDID information from the display.

5 – My Video Files do not play properly.

- The player runs on a version of the Linux operating system. They will not tolerate spaces in the names. Use underscore characters as a separator in long file names.

APPENDIX

Software Installation

Prerequisites: None

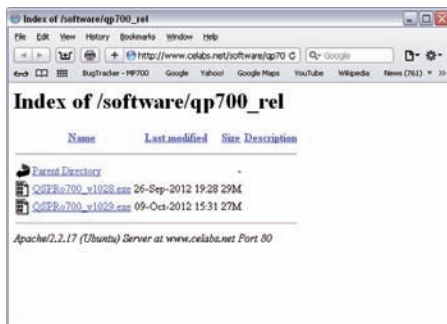
QuickSign Pro 700 Installation Procedure

Step 1:

Download the latest version from

http://www.celabs.net/software/qp700_rel/

When prompted, save the file.



Step 2:

Find the file and execute the file.

(look in My Documents/Downloads)



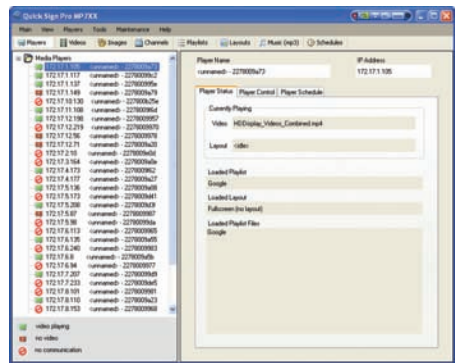
Step 3:

Follow the on screen instructions. When Windows asks to allow the program to access Network resources, click on YES.

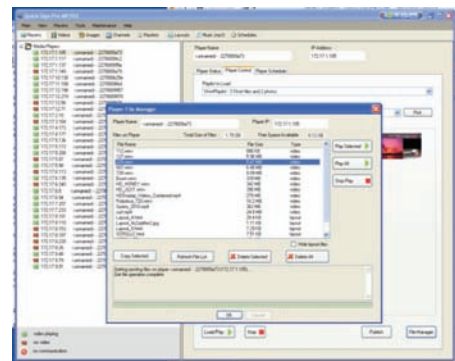


Appendix (continued)

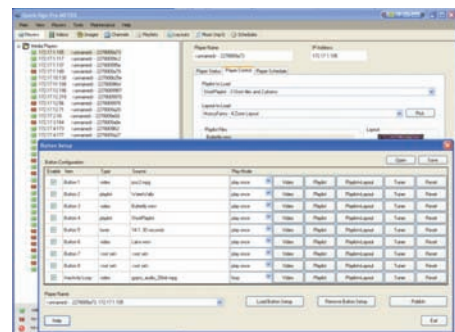
When QS Pro is launched, it will scan the local network for MP700 players. They will be added to the Media Players list in the left column. The box on the right will show the player's current status.



By selecting the Player Control Tab and then clicking on File Manager, the user can see and manipulate media that is loaded on the selected player.



The MP700 may be ordered with a pushbutton GPIO interface. Under TOOLS, SIX BUTTON SETUP, QS Pro allows the user to assign media to a specific button as well as determine the file that plays while a button is not pressed.



Appendix (continued)

CCM2 for Windows

CCM2 is enterprise level software used to control hundreds of media players that can be spread over a diverse geographical or network landscape. This type of software is generally very expensive to purchase and maintain, but our software breaks barriers in price point per unit. Contact our CE labs Sales department for more information and to schedule a demonstration. Our customer service department can assist in configuring your server if you wish to purchase CCM2 and host your own installation.

In order to use the CCM2 system, an application is loaded on the MP70 that will link to the control software using the configured server HTTP address. This method allows for communications to be established without the need for forwarding ports through corporate routers.

When communication is established, the player is added to the system and assigned content packages and scheduling information. Data logs can be reported from the player to include proof of playback information.

Player Main

File Edit View History Bookmarks Window Help

http://www.celabs.com/net/demos/PlayerMain.aspx

celabs CONTENT MANAGER^{CH}

demo (Admin) Logout

Home Players Groups Videos Layout Content Monitor Reports Configurations Admin Help

Home - Players

Add Player Add Players from File Group filter: all players- Player search: Go Clear Search GroupName_2 Create Group

Showing 1-19 of 19 items Per Page: 20

Player Name	MAC Address	Player Type	City	State	Content Name	Configuration Name	Edit	Delete
CAS	002270006e	MP500			-none-	-none-		
chester	001646371ce8	MP500			Robots	-none-		
ExcMP70	002270009a8	MP500			Test Content	-none-		
ExcMP701	0022700098e	MP500			-none-	-none-		
Jeff_Test	00227000a11a	MP500			Mark Testing	-none-		
John_Test	002270009e7	MP500			Robots	-none-		
Kinsay_01	00227000983	MP500			Mark Testing	Config		
Kinsay_rma_000513	00227000a123	MP500			Mark Testing	-none-		
MM_MP700	00227000962	MP500			ContentName_EyeCandy	-none-		
MM_MP700	002270009da	MP500			MM	-none-		
MP500 Integria 1_Demo	00164633994d	MP500	Garland	Texas	ContentName_Sage	Config		
MP700 172_17_7_201 INDGIGA HDMI 1	002270009a8	MP500	Garland	Texas	ContentName_1	Config		
MP700 172_17_9_ViDO HDMI 1	0016468a635	MP500			Drakes_Future	-none-		
MP700 Integria 2_Demo	00227000982	MP500	Garland	Texas	ContentName_Sage	Config		
rebut1	00164632204	MP500			Robots	-none-		
Steve MP70 1	002270009a2	MP500			Mark Testing	-none-		
Steve MP70 2	002270009da	MP500			Robots	-none-		
Steve MP70 3	002270009a7	MP500			-none-	-none-		
test1	00227000969	MP500			Robots	-none-		

Export to Excel All Selected Page Delete All Players

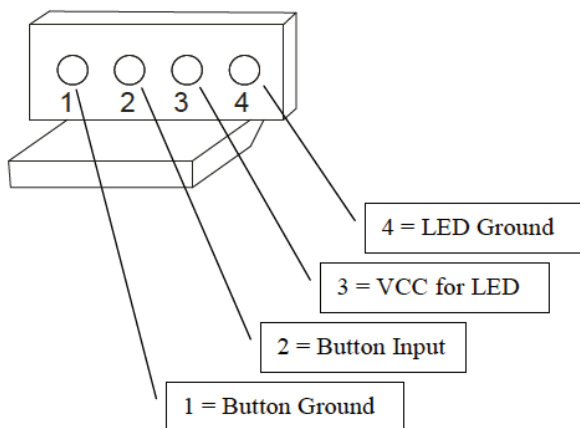
Version: CCM2 1.0.4.2 © Cable Electronics, Inc. 2013

General Purpose Input/Output (GPIO) Options

The MP700 may be ordered with a GPIO interface board to allow pushbuttons to trigger actions on the media player.

GPIO PINOUT

- The eight Button INPUT pins (pin 2) have internal 4.7 K ohm pull-up resistors to +5V. Pull the line to ground (pin 1) to trigger input. There is a 3 second lockout after trigger to de-bounce the input.
- The LED interface has a ground and a positive VCC that is driven by a transistor. When activated, there is 4VDC available to illuminate an LED for the button. Normal condition is off and the 4VDC is asserted while the button is pressed. Current draw on this port should not exceed 20 mA. Use of a current limited LED illuminated button is recommended.
- Reaction to a particular button press can be assigned by using the TOOLS, Button Setup option in our Quick Sign Pro 700 software.



MP700 Multi-Layer Video/Photo/HTML

WEB Rendering Capability of CE labs MP500 and MP700

1. Introduction

CE labs’ HD Media Players, MP500 and MP700 are designed around Sigma Designs’ advanced audio/video processing chipsets which offer highly-integrated solutions for high-bit rate HD video decoding architecture. The stable Linux platform is running CE labs’ own digital signage Middleware which provides various control interface options including Industry-standard based management protocol, SNMP. In this white paper, we provide the specifications and performances of the browsers employed with statistical perspective, and actual performances will vary based on Internet band-width, type and sizes of contents used.

2. Hardware Specification Comparison

	MP500	MP700
CPU	MIPS32 4KEc core (300MHz) 32bit RISC core	MIPS32 24Kf core (700MHz) 32 bit RISC core with Floating Point Unit
DhrystoneMIPS Benchmark	460	1543
DRAM	256MB DDR1-400 @200MHz	512MB DDR2-667 @350MHz
Flash Memory	NOR 256MB	NAND 1GB
Max Data Bandwidth	1.6GB/s	2.8GB/s
Video Format	MPEG2 MP@HL MPEG4 ASP@L5 WMV9 MP@HL VC-1 AP@L3 H.264 HP@L4	MPEG2 MP@HL MPEG4 ASP@L5 WMV9 MP@HL VC-1 AP@L3 H.264 HP@L4
Video Decoder (Hybrid)	CPU@300MHz HW@200MHz	CPU@350MHz HW@350MHz
2D Graphics Accelerator	100M/s	175M/s

As you can see above, the chipset used in MP700 is designed to provide about 2~4 times of performance boost over MP500. MP500 can handle most of high bit rate video including Blu-ray type contents, but MP700 can handle even higher bit rate video with faster CPU and Decoder. The higher performing CPU will also provide faster and smoother rendering of web contents.

3. Browser Specification Comparison

	MP500	MP700
Browser	Konqueror Embedded 3.5.7	QtWebkit 2.0
Max Resolution	1024x768	1920x1080
HTML	V4.0	V4.01 (V5 partial)
XHTML	Not supported	V1.0 (V1.1 partial)
CSS	V2.1	V2.1 (V3 partial)
DOM	Level 2	Level 2 (Level 3 partial)
JavaScript	V1.5	V1.5 (V1.6 partial)
XML	V1.0	V1.1
SVG	Not supported	V1.2 (partial)
Transparency	Not supported	Supported
Video Plug-in	Not supported	Supported

For detailed information on these browsers, please visit the following websites.

Konqueror Embedded

<http://www.konqueror.org/embedded/>

QtWebkit 2.0

<http://trac.webkit.org/wiki/QtWebKitSupportedStandards>

<http://trac.webkit.org/wiki/QtWebKitTableOfFeatures20>

4. Browser Performance Comparison

	MP500	MP700	X1S-Nano ⁽⁵⁾	Android A8 ⁽⁶⁾
Acid Test1	Pass	Pass	Pass	Pass
Acid Test2	Fail	Pass	Pass	Fail
Acid Test3	Fail	Pass	Pass	Fail
SunSpider 0.9.1 ⁽¹⁾	Fail	16 sec	1 sec	7 sec
V8 Java Script Benchmark ⁽²⁾	Fail	90	767	175
Speed-Battle ⁽²⁾	0.08	17.11	24.67	14.45
GUIMark Text Test ⁽²⁾	0.11 f/s	0.34 f/s	9.08 f/s	3.3 f/s
Browser Loadtime Stopwatch ⁽³⁾	Fail	22 Sec	8 sec	10 sec
Loadtime ⁽⁴⁾	1386 ms	280 ms	115 ms	129 ms

(1) Smaller is better

(2) Bigger is better

(3) <http://cache.lifehacker.com/assets/resources/stopwatch.php> (1)

(4) <http://nontroppo.org/test/Op7/loadtime.html> (1)

(5) AMD T-56N 1.6GHz, 2GB Win7e, Internet Explorer 9

(6) Samsung Galaxy S Cortex A8 1GHz, 512MB, Android 2.2

5. Summary

Both the MP500 and MP700 are capable of rendering Internet websites and local web pages on real time basis while playing 1080P video on the side. Primary advantage using the MP500 and MP700 over a PC is their higher video playback quality utilizing HW-based Decoder opposed to using software codecs on a PC. With the embedded CPU, our HD Media Players only use less than 7 watts of power. Also, with no moving parts, the reliability of the Media Player is much greater than a PC.

The Standard Video Encoding Guide (abridged)

Video Format Support

MPEG2 MP@HL
MPEG4.2 ASP@L5
MPEG4.10 (H.264) MP@L4.0
WMV9 MP@HL
VC-1 AP@L3

While the player supports data rates up to 40Mb/s, it is best to average 35Mb/s or less for optimum performance.

Audio Format Support

MPEG1 Layers I, II, and III (MP3) 2.0
MPEG4 AAC-LC 5.1
FLAC
MP3 (Optional)

Description of Document:

The purpose of this document is to provide information on encoding video for the CE labs MP700 players. The MP700 supports three main formats: Windows Media 9, MPEG-4 part 10 (h.264) and MPEG-2. Windows Media 9 can take the form of a WMV/WMA or VC-1. MPEG-2 can take the form of a program stream or transport stream. There are guidelines for encoding each of these formats; however, we suggest using the MPEG-4 container with the h.24 codec for optimized playback, which is specified below.

MP700 Video/Audio Encoding Settings for MPEG-4 (h.264 Codec)

Video Settings:

File Format: Mpeg 4
Frame rate: 23.97 or 29.97
Codec: H.264
Resolution: 1920 x 1080
Bit rate: Variable bit rate = Target: 20 Mbps Maximum: 35 Mbps

Audio Settings:

Codec: AAC (Mpeg 4)
Output Channels: Stereo
Frequency: 44.1 kHz or 48 kHz
Bit rate: 192 kbps
Target of -12 dB

Note: Frame rate and frequency will need to be the same as the source video being encoded

Suggested programs for encoding content:

There are many types of video encoders that are available. Below is a list of encoders we have used to successfully encode video content for smooth playback on the MP700.

- Adobe Media Encoder
- QuickTime Pro
- WMA9 2.0
- Wondershare Media Encoder
- HE-AAC 5.1
- Dolby Digital 5.1

Firmware Update via SD Card

Requirements

Phillips screwdriver to move the SD Card Cover Plate. One pre-loaded SD Card with the firmware update.

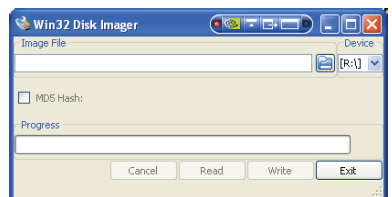
Procedure

1. Turn off the MP700 device and remove any SD card that may be installed. This is under a small door on the side.
2. Insert the Firmware Update SD Card.
3. Reapply power to the media player.
4. The media player will boot and begin the update process. If attached to a monitor, you may notice the files being updated on the screen.
5. After the process is complete (around 2 minutes), the media player will stop at a command prompt (bash-3.000).
6. Unplug the player and remove the Firmware Update SD Card.
7. Re-insert the original content SD Card and re-apply power to the unit.
8. You may verify the current firmware installed on the unit by looking at the OSD information page. Press MENU on the remote and then press INFORMATION.
9. Procedure complete.



Creating an Update SD Card

- Obtain the update firmware “img” file from CE labs.
 - This is generally a very large file and will require a FTP transfer.
- Use disc image burning software to create a bootable SD Card.
 - One such program is Win32 Disk Imager.



Browser Layer Design Guidelines

1. This browser is standards-compliant and should correctly interpret all but most exotic CSS and JavaScript syntax.
2. Try keeping the total uncompressed size of images including those that are not visible at the moment, or downloaded using JavaScript under 2 MB. Avoid complicated page structures (deeply nested tables, etc.), and keep formatting simple.
3. Avoid resizing images in HTML, CSS or JavaScript by specifying width and height. This will increase memory usage. Specifying width/height is OK only if the dimensions are exactly equal to the natural dimensions of the image.
4. When designing dynamic effects, keep in mind performance limitations. We found that moving large bitmaps or text across the screen (marquee) is either slow/not smooth. However, image and text rotators seem to work fine.
5. When manipulating objects (especially images) in JavaScript, release the buffer (`MyImg.src=""`) or make sure that the object goes out of scope when no longer needed. Some techniques, like preloading images one at a time in image rotators shortly before use, and releasing shortly afterwards may be helpful.
6. When developing playlists, allow enough time to load websites, especially when video is being played concurrently. When navigating from a web page to another web page, allow some time for the previous page to unload. For large, complicated pages both loading and unloading may take several seconds each. Recommended time between page changes is 10 minutes depending on the complexity of the page being displayed.
7. Page dimensions should not exceed displayed dimensions (typically 1366x768, 1024x768, etc).
8. Pages should be developed specifically for the MP70 family as the browser limitations make displaying generic web pages unpredictable.
9. When using active JavaScript, try not to change to other pages. As the JavaScript is running and is asynchronous to running playlists, information may be loaded/unloaded at any time; therefore, a playlist should not change the actively displayed web page. This can however be handled in the JavaScript since it controls loading/unloading of objects, etc.
10. When using a multilayer display, video bandwidth needs to be reduced. The recommendation currently is MPEG-2 MP@HL running at 20Mbps or lower.
11. Avoid using H.264 in layering mode. The Memory bandwidth required to process H.264 HD is very high and causes memory limitations for other intense applications such as the Browser to function correctly.
12. When spawning a Video, or picture from the Browser JavaScript always use `"?internal=1"` as an option in the video execution line.
13. Macromedia Flash is not supported.

Manual SD Card Formatting

The easiest way to begin using the MP700 is to use the free CE labs QuickSign Pro 700 software and that is highly recommended. If you wish to set the player up manually, that is possible as well, but will require some configuration. An example of playing three video files in a loop is shown below.

- 1.** Connect the MP700 to a HD monitor.
- 2.** Place a SD card in the PC that contains the content you wish to play.
- 3.** Create the following folders on the SD card.
 - a. Html/
 - b. Video/
 - c. Music/
 - d. Picture/
 - e. Playlist/
 - f. MP7XXConfig/
- 4.** Copy your videos to the Video folder.
- 5.** Create the following file:

```
[Control]
PlaylistVersion=2.0
[List]
ENTRY1 = VIDEO, Video_File_1
ENTRY2 = VIDEO, Video_File_2
ENTRY3 = VIDEO, Video_File_3
ENTRY4 = LOOP
```

Save this file as text file (let's call it "PL1") but without the .txt suffix in the Playlist folder. The LOOP command will cause the files to repeat. The Video_File_X must match the file names of your videos exactly (no spaces and capitalization matters).
- 6.** Create another file:

```
StartUpltem, Playlist, PL1
```

Save this file as a text file with the name "mp7xx.conf" (no .txt suffix) in the MP7XXConfig folder. This will cause the PL1 playlist to start automatically.
- 7.** Remove the SD from the PC and insert into the MP700. The video files should begin to play.

This is an exacting manual process that is extremely easy when done with the QuickSign Pro 700 software. It is available as a free download at:
http://www.celabs.net/software/qp700_rel.

WARRANTY

CE labs® warrants the MP70, High definition media player, to be free from defects in the material and workmanship for 1 year from the date of purchase from CE labs® or an authorized dealer. Should this product fail to be in good working order within the 1 year warranty period, CE labs®, at their option, will repair or replace the unit, provided that the unit has not been subjected to accidental damage, disaster, static discharge and power surge, abuse or any unauthorized modifications. This warranty is offered by CE labs® for its BUYER with direct transaction only. **This warranty is void if the warranty seal on the metal housing is broken.**

A unit that fails under conditions other than those covered will be repaired at the current price of parts and labor in effect at the time of repair. Such repairs are warranted for 90 days from the day of reshipment to the BUYER. If the unit is delivered by mail, customers agree to insure the unit or assume the risk of loss or damage in transit. Under no circumstances will a unit be accepted without a Return Authorization Number (RMA #).

This warranty is in lieu of all other warranties expressed or implied, including without limitations, any other implied warranty, or suitability, or merchantability for any particular purpose, all of which are expressly disclaimed.

Proof of sale may be required in order to claim warranty. Customers outside USA are responsible for shipping charges to and from CE labs® **Cables and power adapters** are limited to a **30 day warranty** and must be free from any markings, scratches, and neatly coiled.

The content of this manual has been carefully checked and is believed to be accurate. However, CE labs® assumes no responsibility for any inaccuracies that may be contained in this manual. CE labs® will NOT be liable for direct, indirect, incidental, special, or consequential damages resulting from any defect or omission in this manual, even if advised of the possibility of such damages. Also, the technical information contained herein regarding the MP70 features and specifications is subject to change without further notice.

CE labs
3209 Wood Drive.
Garland, TX 75041
(469) 429-9200
(800) 767-6189
Fax: (469) 429-9205

INSTALLER NOTES

Purchasing Date:

S/N:

INSTALLER NOTES

Purchasing Date:

S/N:

INSTALLER NOTES

Purchasing Date: S/N:

Purchasing Date: S/N:

[illegible]

THIS PAGE IS LEFT
INTENTIONALLY BLANK

CE labs can support many areas of your audio and video distribution needs.

We manufacture:

- Digital Signage software and Media Players
- HD Matrix Switchers
- RF amplifiers
- HDMI and Component HD distribution amplifiers
- CAT 5 Signal Extenders
- VGA Extenders and Splitters
- and cables of all types.

See our full product line at www.celabs.net

WARRANTY

Cable Electronics, Inc. warrants this product to be free from defects in material and workmanship, under normal use and service, for a period of one year from the purchase by the original purchaser. If this product is defective or malfunctions, Cable Electronics will replace or repair this unit (at their option) within a reasonable time. No expressed or implied warranty is made for any defects caused by immersion or exposure to liquids, abuse, neglect, improper operation of unit, excess wear and tear and defects resulting from unauthorized disassembly and or modification.



3209 Wood Drive
Garland, TX 75041
Phone: (469) 429-9200
Toll free: (800) 767-6189
Fax: (469) 429-9205
www.celabs.net

Document:
900-5067-01 Rev. A